

AMENDMENTS TO THE CLAIMS

1. (Currently amended) A touch pad assembly, comprising:
a touch pad having a surface and one or more sensors ~~that~~ configured to map the touch pad surface into native sensor coordinates; and
a controller ~~that~~ configured to
~~divides the surface of the touch pad into~~ define one or more logical device units associated with the surface of the touch pad,
~~receives the~~ receive from the one or more sensors native values ~~[[of]]~~ associated with the native sensor coordinates ~~from the sensors~~,
~~adjusts~~ adjust the native values ~~[[of]]~~ associated with the native sensor coordinates into ~~[[a]]~~ new ~~value~~ values associated with the logical device units and
~~reports~~ report the new ~~value of the logical device units~~ values to a host device, the logical device units ~~representing~~ associated with areas of the touch pad that can be actuated by a user,
wherein the controller is configured to compare a current set of native values and a prior set of native values and identify the current set of native values as associated with noise events or actual events depending whether the current set of native values and the prior set of native values are substantially similar.

2. (Currently amended) The touch pad assembly as recited in claim 1 wherein the controller ~~passes~~ is configured to pass the native values ~~of the native sensor coordinates~~ through a filtering process before adjusting the native values into ~~a new value~~ new values.

3. (Currently amended) The touch pad assembly as recited in claim 2 wherein the filtering process includes determining if the native values are ~~based on~~ associated with noise events or actual events.

4. (Currently amended) The touch pad assembly as recited in claim 3 wherein the controller ~~filters~~ is configured to filter out the noise events and ~~allows~~ allow the actual events to pass ~~through~~.

5. (Currently amended) The touch pad assembly as recited in claim 1 wherein the controller ~~further determines~~ is configured to determine if ~~there is~~ a significant ~~change has been made~~ difference between ~~the~~ a current native value and ~~last a previously received native values value,~~ and ~~only reports the new value to report a new value only~~ when there is a significant ~~change has been made~~ difference between the current native value and ~~last a previously received native values value.~~

6. (Currently amended) The touch pad assembly as recited in claim 1 wherein the native sensor coordinates ~~[[are]]~~ comprise Cartesian coordinates.

7. (Currently amended) The touch pad assembly as recited in claim 1 wherein the native sensor coordinates ~~[[are]]~~ comprise Polar coordinates.

8. (Currently amended) The touch pad assembly as recited in claim 1 wherein the logical device units ~~[[are]]~~ comprise Cartesian coordinates.

9. (Currently amended) The touch pad assembly as recited in claim 1 wherein the logical device units ~~[[are]]~~ comprise Polar coordinates.

10. (Currently amended) The touch pad assembly as recited in claim 1 wherein the new ~~value~~ values of the logical device units are reported in an absolute mode.

11. (Currently amended) The touch pad assembly as recited in claim 1 wherein the new ~~value~~ values of the logical device units are reported in a relative mode.

12. (Currently amended) The touch pad assembly as recited in claim 1 wherein the new ~~value~~ values of the logical device units are reported in a Cartesian absolute mode, a Cartesian relative mode, a Polar absolute mode or a Polar relative mode.

13. (Currently amended) The touch pad assembly as recited in claim 1 wherein the new ~~value~~ values of the logical device units ~~implements~~ implement a specific control function in the host device.

14. (Currently amended) The touch pad assembly as recited in claim 1 wherein the logical device units ~~[[are]]~~ comprise angular Polar units distributed around the surface of the touch pad in a clock like manner.

15. (Currently Amended) The touch pad assembly as recited in claim 1 wherein the ~~ratio of~~ native sensor coordinates ~~[[to]]~~ and the logical device units ~~[[is]]~~ define a ratio between about 1024:1 to about 8:1.

16. (Currently Amended) The touch pad assembly as recited in claim 1 ~~further~~ comprising one or more touch buttons having one or more sensors, ~~[[and]]~~ wherein the controller ~~receives~~ is configured to receive a native value from the one or more sensors, ~~determines~~ determine a button status from the native value, and ~~reports~~ report the button status to a host device, the button status being used by the host device to implement a button function in the host device.

17. (Currently amended) The touch pad assembly as recited in claim 16 wherein the controller only reports the button status to the host device when ~~it is determined that~~ there is a change in button status.

18. (Currently amended) The touch pad assembly as recited in claim 1 wherein each of the logical device units ~~represent~~ is associated with a different movement direction on a display screen of the host device ~~so as to enable joystick implementations, multiple dimensional menu selection or photo image panning.~~

19. (Currently amended) The touch pad assembly as recited in claim 1 wherein the host device ~~[[is]]~~ comprises a media player ~~for storing and playing~~ configured to at least one of store and

~~play media such as~~, the media comprising at least one of audio, video [[or]] and images, the media player including comprising a housing that supports configured to support the touch pad assembly, a display for displaying configured to display at least one of text and graphics to a user of the media player and a CPU capable of receiving configured to receive the new value of the logical device units from the controller and issuing issue commands based on the new value of logical device units to other components of the media player, the commands being used to enabling at least move movement of an object on the display.

20. (Canceled).

21. (Currently amended) The method as recited in claim [[20]] 26 wherein the control signal includes the native values of the native sensor coordinates.

22. (Currently amended) The method as recited in claim [[20]] 26 further comprising: adjusting the native values of the native sensor coordinates into [[a]] new ~~value~~ values when a desired event occurs on the touch pad, the control signal including the new ~~value~~ values.

23. (Currently amended) The method as recited in claim [[20]] 26 wherein the new ~~value~~ has the same units as values and the native values are described using identical units.

24. (Currently amended) The method as recited in claim [[20]] 26 wherein the new ~~value~~ has different units as values and the native values are described using different units.

25. (Canceled).

26. (Currently amended) ~~The method as recited in claim 25~~ A method comprising: mapping a touch pad into native sensor coordinates, producing a native value associated with a native sensor coordinate when at least one of several different types of events occur on the touch pad,

filtering the native value based on the type of event,
generating a control signal based on the native value when a desired event occurs on the
touch pad,

wherein the step of filtering comprises determining whether the native value is associated
with a noise event or an actual event, filtering a noise event and passing an actual event, and

wherein the step of determining comprises: comparing a current set of native values with a last set of native values; classifying the current set of native values as noise events when the current set of native values is substantially similar to the previous set of native values; and classifying the current set of native values as actual events when the current set of native values is significantly different than the previous set of native values.

27. (Currently amended) The method as recited in claim ~~[[25]]~~ 26 wherein the control signal includes native values ~~[[of]]~~ associated with the native sensor coordinates if ~~it is determined that~~ the events are actual events.

28. (Currently amended) The method as recited in claim ~~[[25]]~~ 26 further comprising: adjusting the native values of the native sensor coordinates into a new value if it is determined that the events are actual events, and including the new value in the control signal.

29-30. (Canceled).

31. (Currently amended) ~~The method as recited in claim 30~~ A signal processing method for a controller of a touch pad, comprising:

receiving a current user location,

determining a difference in user location by comparing the current user location and a last
user location,

outputting the current user location when the difference in user location exceeds a threshold
value,

converting the outputted current user location into a logical device unit, and

generating a message for a host device, the message including the more logical user location, the more logical user location being used by the host device to move a control object in a specified manner,

wherein the threshold value corresponds to the number of sensor levels that need to be changed in the touch pad in order to report a change in the user location and

wherein the threshold is determined by the following equation:

Threshold (T) = $C * (\text{native sensor resolution of the touch pad} / \text{logical device resolution of the touch pad})$,

where

the native sensor resolution ~~defines~~ represents the maximum number of different user locations ~~that detectable by the sensors of the touch pad are able to detect over the touch pad plane,~~

the logical device resolution ~~defines~~ represents the number of logical device units ~~that reported to the host device by the touch pad reports to the host device,~~ and

C defines the width border area between clusters of sensors of the touch pad that define one logical device unit.

32. (Currently amended) The method as recited in claim 31 wherein ~~the coefficient C~~ [[is]] has a value between about 0 and 0.5.

33. (Original) The method as recited in claim 31 wherein the native sensor resolution is about 1024 and the logical device resolution is about 128.

34. (Currently amended) The method as recited in claim ~~[[29]]~~ 31 further comprising: storing the current user location for subsequent processing, the current user location acting as the last user location in subsequent processing.

35. (Currently amended) In a computer system that facilitates bidirectional communications between a touch pad assembly and a host device, a message from the touch pad assembly to the host device, the message comprising: an event field identifying whether the message is a touch pad event

or a button event; an event identifier field identifying at least one event parameter, each event parameter having an event value, the event value for a touch pad event parameter indicating an absolute position, the event value for a button event parameter indicating button status, the system comprising a controller configured to compare a current set of native values and a prior set of native values and identify the current set of native values as noise events or actual events depending on whether the current set of native values and the prior set of native values are substantially similar.

36. (Currently amended) A touch pad assembly system capable of transforming a user action into motion onto a display screen, the touch pad system including a touch pad whose entire touch sensing surface is divided into a plurality of independent and spatially distinct actuation zones, each of which includes a plurality of sensing nodes of the touch sensing surface, and each of which represents a different control function, the system comprising a controller configured to compare a current set of native values and a prior set of native values and identify the current set of native values as noise events or actual events depending on whether the current set of native values and the prior set of native values are substantially similar.

37. (Currently amended) The touch pad assembly system as recited in claim 36 wherein each of the actuation zones are button zones that represent different movement direction on the display screen so as to enable joystick implementations, multiple dimensional menu selection or photo image panning.

38. (Currently amended) The touch pad assembly system as recited in claim 36 wherein the actuation zones are substantially the same size and shape and include substantially the same number of sensing nodes of the touch sensing surface.

39. (Currently amended) The touch pad assembly system as recited in claim 36 wherein the touch sensing surface is circular, wherein the touch sensing nodes of the touch sensing surface are positioned at least angularly around the circular touch sensing surface, and wherein the actuation zones are positioned at least angularly around the circular touch sensing surface.